

Application No. 09/708,341
Reply to Office Action of May 19, 2004

Amendments to the Claims

The following listing of the claims will replace all prior versions, and listings of the claims in the application:

Listing of Claims

1. (currently amended) A method of finding motion vectors for use in MPEG video encoding, the method comprising:

generating from a full frame, (i) a first scaled frame having a reduced number of pixels as compared to the full frame and (ii) a second scaled frame having a reduced number of pixels as compared to the first scaled frame;

performing a first, full, best match search of the second scaled frame to identify rough motion vectors, the first search using reference blocks consisting of four macroblocks;

performing a second best match search using the rough motion vectors identified by the first search, within a limited range in the X and Y directions for each macroblock of the first scaled frame to identify intermediate motion vectors; and

performing a third best match search using the intermediate motion vectors identified by the second search, within a limited range in the X and Y directions for each macroblock of the full frame to identify final motion vectors, ~~wherein the first search uses four macroblocks.~~

2. canceled

3. (original) The method of claim 1, further comprising:

using the results of the first search to identify a scene change and obtain a new reference frame.

4. (original) The method as recited in claim 1 further comprising:

using the results of the first search to identify a still frame which can be deleted.

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5. canceled
6. (previously presented) The method as recited in claim 1 wherein the scaled frames are generated using the result of an inverse discrete cosine transform process.
7. (original) The method as recited in claim 1 wherein the limited range of the second search is -1, 0, +1 pixels.
8. (original) The method as recited in claim 1 wherein the limited range of the third search is -1, 0, +1 pixels.
9. (original) The method as recited in claim 1 further comprising:
performing a fourth best match search using the final motion vectors within a limited range in the X and Y directions of -0.5, 0, +0.5 pixels of a virtual frame formed by averaging a reference macroblock and a pixel shifted macroblock.
10. (original) The method as recited in claim 1 wherein the first scaled frame is a one-half scaled frame having one-fourth of the number of pixels as a full frame.
11. (original) The method as recited in claim 1 wherein the second scaled frame is a one-fourth scaled frame having one sixteenth of the number of pixels of a full frame.
12. (original) The method as recited in claim 1 wherein the full frame is an I frame.

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Amendments to the Drawings:

The attached sheet of drawings includes a change to Fig. 3B. This sheet, which includes Figs. 3A, 3B, replaces the original sheets including Figs. 3A, 3B.

A typographical error in Fig. 3B has been corrected by changing the legend "INTEGER" to "FLOATING POINT".

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